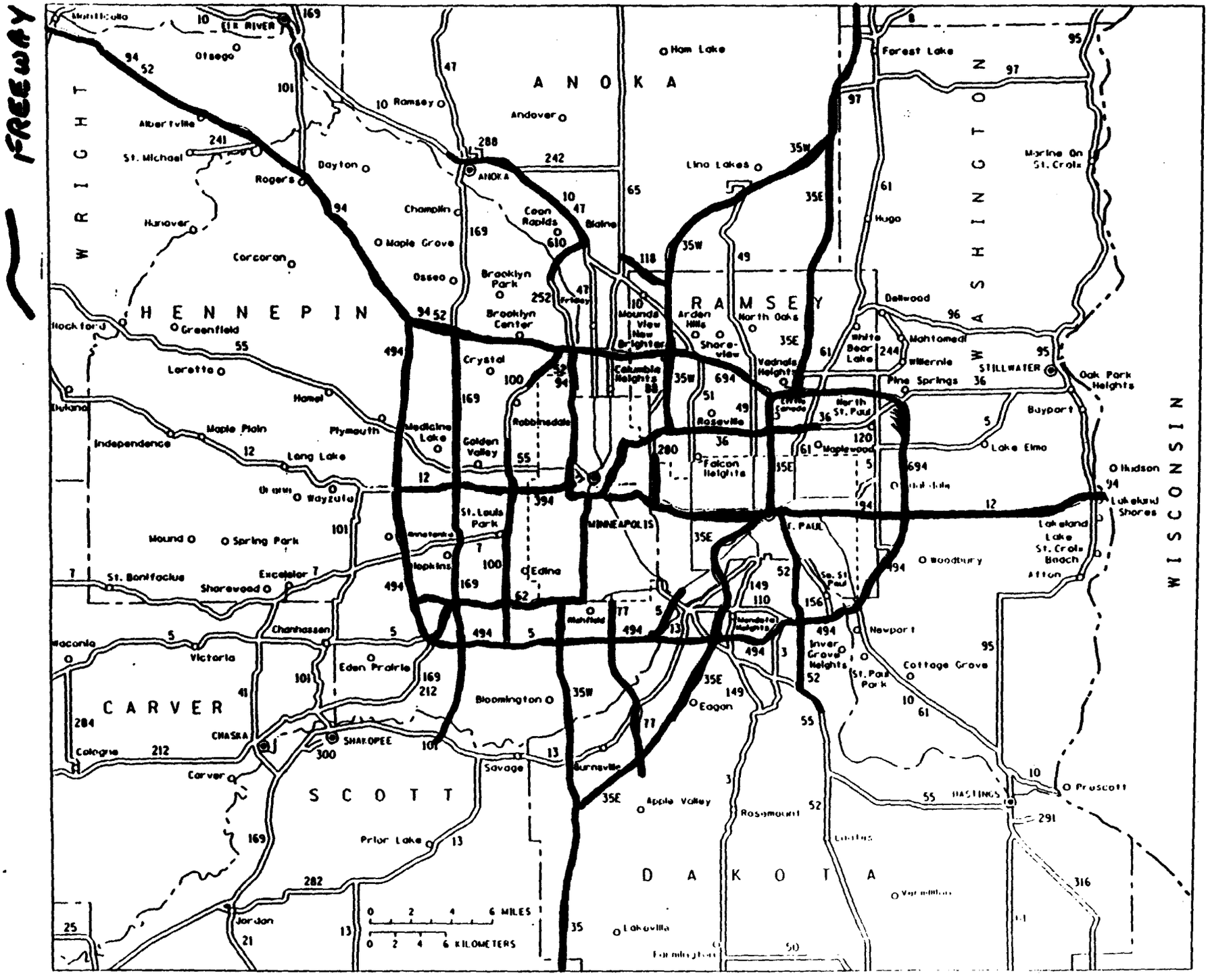
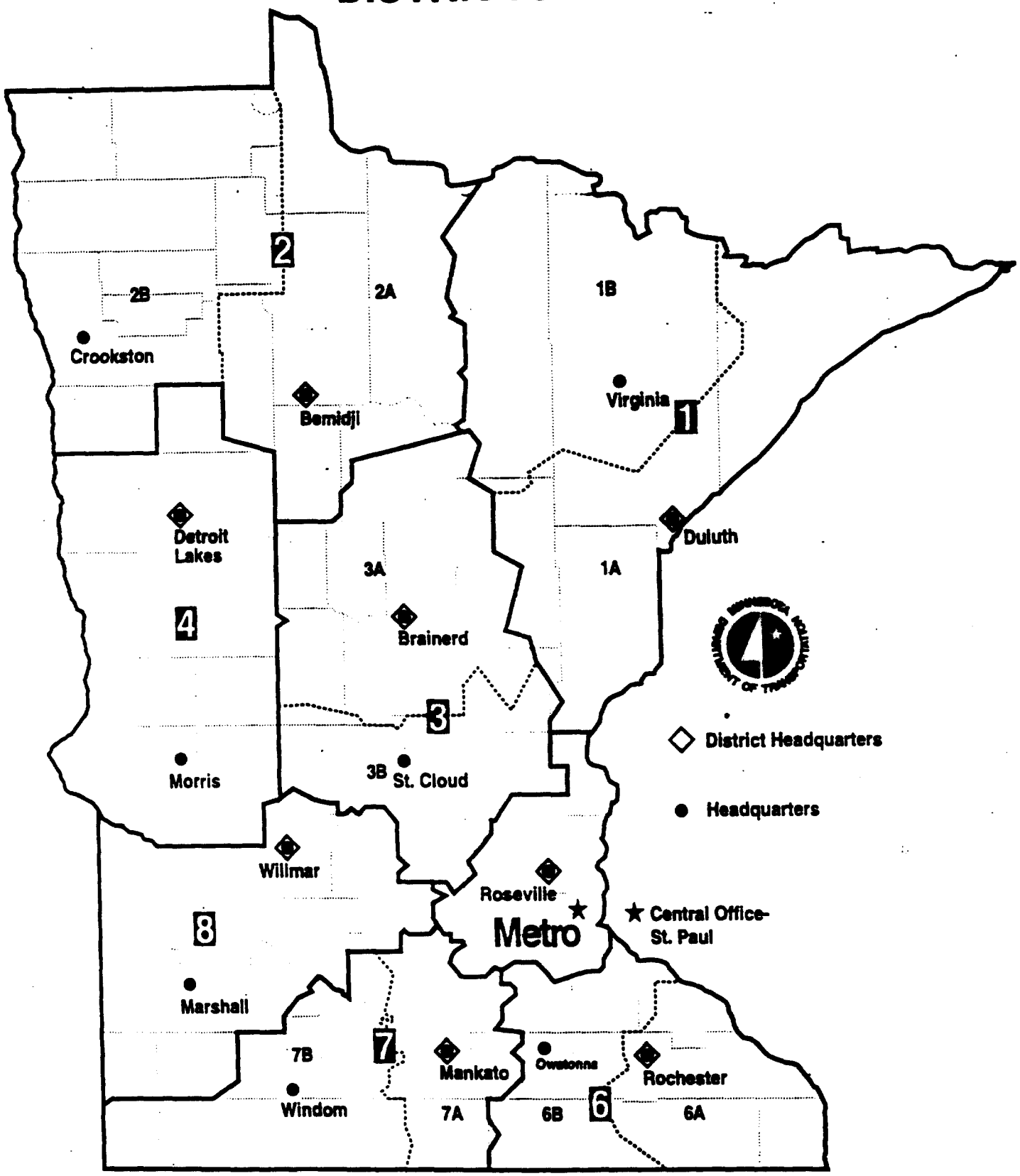
Attachment B

MINNEAPOLIS - ST. PAUL AND VICINITY



Minnesota Department of Transportation
DISTRICTS



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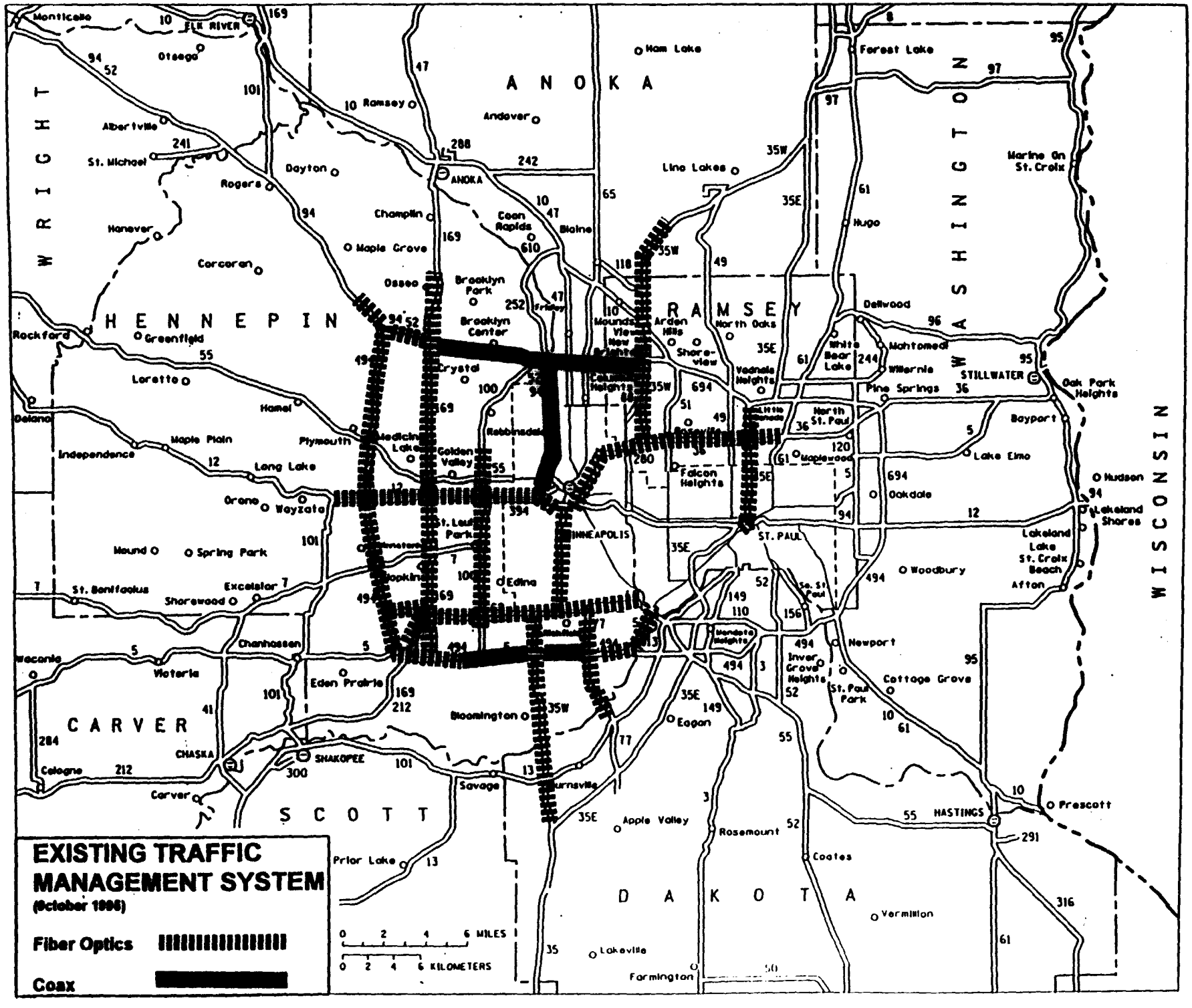
MINNEAPOLIS - ST. PAUL AND VICINITY



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MINNEAPOLIS - ST. PAUL AND VICINITY

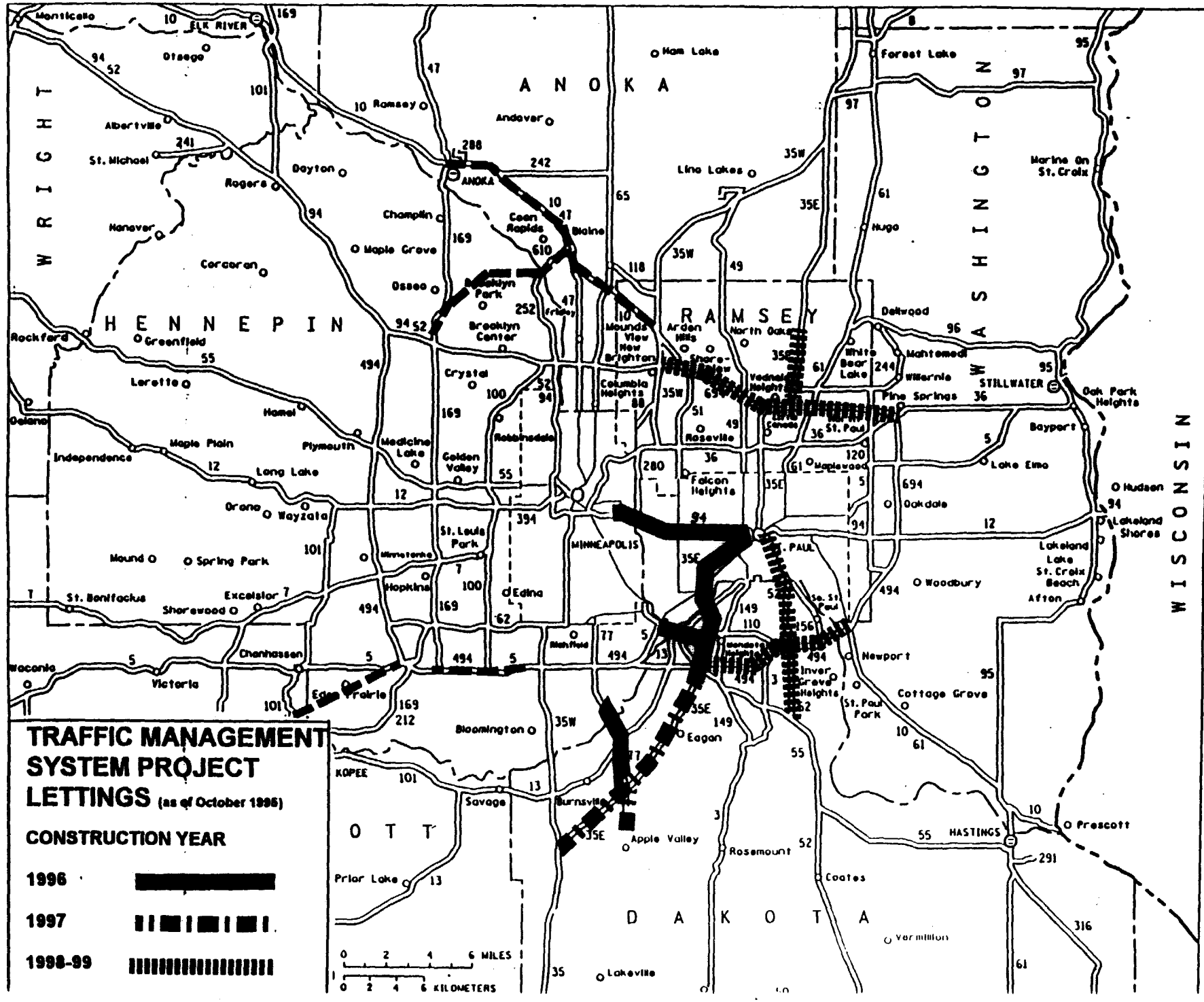

EXHIBIT 2

Report #FHWA-JPO-96-0015, April 1996.

Shared Resources: Sharing Right-of-Way for Telecommunications - Guidance on Legal and Institutional Issues

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Exhibit 2.

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EXECUTIVE SUMMARY

BACKGROUND

The advent of fiber-optic communications technology coupled with continued rapid growth in demand for communications capacity have led private communications companies to seek to build new and extend existing fiber-optics networks. Coincident with this, government agencies at all levels are seeking to establish communications networks for intelligent transportation systems (ITS) and other governmental functions. It is in this context that there is increased incentive and opportunity for sharing the public resource of highway *right-of-way* in exchange for private telecommunications expertise and capacity to further both public sector and private corporate objectives.

In light of these developments and a growing body of applied experience, the Federal Highway Administration (FHWA) authorized this study to explore nontechnical issues related to such projects, generally referred to as "shared resource" projects, and to develop and present guidance for those considering this approach in highway rights-of-way.

Traditionally, longitudinal access to the right-of-way for non-transportation communication networks has been carefully controlled, especially in freeways and limited access highways. In early 1988, the US Department of Transportation revised its policy on utility accommodation, allowing states with FHWA-approved utility accommodation plans to permit installation of fiber-optic cables and other utility infrastructure along interstate rights-of-way, thus setting the stage for shared resource projects. More recently (October 1995), the AASHTO Board of Directors directed AASHTO committees to formulate guidelines for accommodation of fiber optic cable in roadway rights-of-way.

A shared resource project in this context has four specific features:

- Public-private partnering;
- Private longitudinal access to public roadway right-of-way;
- Installation of telecommunications hardware (principally fiber-optic lines, but also cellular towers/antennae);
- Compensation granted to the right-of-way owner over and above administrative costs.

Compensation options include barter and cash. In barter or in-kind arrangements, private parties install the system, receiving access to the right-of-way for their own capacity in return for providing telecommunications capacity to the public agency. In cash arrangements, private parties install the telecommunications system, receiving access to the right-of-way in return for monetary compensation to the public agency. Hybrids of the barter and cash alternatives can also be created in which in-kind compensation (communications capacity) and monetary compensation are combined as consideration for private access to right-of-way for private sector objectives.

Shared resource projects are an innovative approach but only one of several ways to provide for public sector needs and, by no means, a universal solution. Before embarking on shared resource arrangement, public agencies must evaluate their telecommunications needs, the several options available to meet those needs (including private sector-supplied services), and then the appropriateness of each option in light of specified needs. This study on shared resource projects was intended to support those agencies that, after this initial screening process, have determined that shared resource projects do indeed offer the best solution.

ISSUES

The research team identified 20 issues in four categories that figure prominently in shared resource arrangements; these are detailed in the table below. Threshold Legal and Political Issues are those that must be addressed at the outset; if left unresolved, they can thwart further progress. Financial Issues involve valuation and taxation. Project Structure Issues deal with how the project will be implemented and Contract Issues focus on more detailed aspects of each partnering agreement, particularly the allocation of responsibilities between public and private partners. This report defines these issues, lists

options for addressing each, and describes the advantages and disadvantages of available options.

Issues Associated with Shared Resource Project Development

Public sector authority to receive and/or earmark compensation:*	The public sector may be precluded from receiving cash payments, but may still be free to engage in barter arrangements, particularly if they are structured as procurements. In general, state departments of transportation (DOTs) have less flexibility; municipalities and authorities such as turnpike and transit agencies have greater flexibility in dealing with cash flows.
Authority to use public right-of-way for telecommunications	Shared resource arrangements may be precluded if state law mandates free access for utilities or if public agencies are not allowed to discriminate among utilities (e.g., permit access for telecommunications but disallow ac cess for gas and sewerage).
Authority to participate in public-private partnerships	Because shared resource arrangements are a form of public-private partnering, legal authority to enter into such agreements is a basic requirement. In some cases, "implied authority" is not considered sufficient a nd specific legislation or "express authority" must be passed.
Political opposition from private sector competitors	Shared resource arrangements may trigger political opposition, though not necessarily prohibition, from private sector companies resisting the establishment of bypass networks that they perceive as competing w ith the services they offer. Opposition may be slight when the bypass system is limited to transportation needs, but it is likely to be stronger if the system supplies a greater range of public sector communications needs.
Inter-agency and political coordination	In addition to investing effort in coordination among agencies in the same political jurisdiction, the lead public agency may also have to orchestrate agreements between geographically proximate political jurisdictions to e nsure continuity of fiber for their private partner(s).
Lack of private sector interest in shared resources	At its core, shared resource arrangements depend on private sector interest in expanding telecommunications infrastructure. Reluctance to enter into partnerships with public agencies for access to right-of-way may stem from insufficient market demand for increased communications capacity, cost factors such as more stringent installation specifications along roadway right-of-way, and administration or managerial burden of compliance.

*Valuation of public resources**	Before entering into shared resource agreements, the public sector needs to have some idea of the value of the assets it brings to the partnership; that is, continuous or sporadic access to its right-of-way for placement of private (communications) infrastructure.
*Tax implications of shared resource projects**	Partnerships between public and private entities may pose unique tax issues, particularly bond eligibility for tax-exempt status when proceeds may benefit profit-making private organizations.
Valuation of private resources	Valuation of the private resources provided in barter arrangements helps the public sector determine whether it is receiving a fair market "price" for its resource.
Public sector support costs	Although shared resource arrangements provide cash revenue or telecommunications infrastructure without public sector cash outlays, such compensation is not without cost since the public sector must use agency labor hours f or administration, coordination, and oversight.
*Exclusivity**	Shared resource arrangements may limit access to public right-of-way to a single private sector partner in any specific segment, that is, grant exclusivity. From the public sector point of view, exclusive arrangements have both advantages (administrative ease) and disadvantages (potential constraints on competition among service providers, lower total compensation received by public sector).
Form of real property right	Shared resource arrangements can be structured in any of several legal formats (easement, lease, franchise, license) with variations in the property rights conveyed. Moreover, the property right may involve access to the ri ght-of-way itself for privately owned infrastructure, or be limited to access to (or use of) publicly owned infrastructure.
Type of consideration	Compensation to the public sector may in the form of goods (in-kind), cash, or combinations of both. Moreover, in-kind compensation can include not only basic fiber-optic cable but also equipment to "light " the fiber, maintenance, and even operation and upgrading.
Geographic scope	Projects can be extensive in scope, covering long segments of roadway, or more focused on specific areas. The option that is best in any individual context depends on other factors, such as considerations of administrative burden, service interests of potential bidders, and private sector willingness to install infrastructure in an area larger than their primary area of interest.
*Relocation**	Allocation of responsibility for infrastructure relocation in case of roadway improvements affects private partner willingness to pay for right-of-way insofar as it carries a financial responsibility as well.
*Liability**	Similarly, allocation of legal liability among partners affects the financial risks assumed by each one. Liability includes responsibility for system repair, consequential damages (economic repercussions), and tort actions.
Procurement issues	Shared resource arrangements face many of the same issues as other procurements regarding selection and screening of private vendors or partners.
System modification	Shared resource arrangements may or may not include explicit provisions for system modification; that is, technological upgrading to keep abreast of technical improvements and expansion of capacity to meet subsequent needs.
Intellectual property	Intellectual property involves intangible components (e.g., software programs) of the operating system that might not be available to the public sector partner when the partnership is dissolved after the lease period unless specifically addressed in the contract.
Social-political issues	Social-political issues involve equity among political jurisdictions or population segments within the right-of-way owner's domain. More specifically, two issues may affect how shared resource arrangements are structured: m ost-favored community issues-comparable compensation for all communities engaging in shared resource arrangements, and geographic and social equity-equitable access to and benefit from shared resource arrangements.

Note: * Designates issues that were selected by the project's January 1995 focus group for further study.

CASE STUDIES

In addition to addressing individual issues, this report describes five case studies, which exemplify the broad range of ways in which shared resource projects can be implemented:

- *State of Maryland:* Maryland has entered into a shared resource agreement with MCI and Teleport Communications Group (TCG) to install 75 miles of fiber optics along I-95; Maryland will receive 48 fibers, equipment to "light" 24 fibers, and maintenance services. Each of the three partners will own its own fiber, but only MCI will physically access the system.
- *Ohio Turnpike Commission:* The Ohio Turnpike Commission is involved in several non-exclusive licensing agreements with private telecommunications providers for installation of infrastructure along the right-of-way. The projects vary in mileage and location along the turnpike; the Commission is compensated with a fixed per-mile

- annual license fee of $1,600 and rights to use the fiber optics for Turnpike purposes at low or no cost, if desired.
- *State of Missouri:* Using standard procurement procedures, the State of Missouri contracted with Digital Teleport, Inc. (DTI) for installation of more than 1,300 miles of a backbone system of six fiber-optic cables, associated telecommunications equipment, and maintenance dedicated to Missouri Highway Administration use in exchange fo DTI's exclusive access to the same right-of-way for its own fiber-optic system.
- *Bay Area Rapid Transit:* San Francisco Bay Area Rapid Transit (BART) concluded a three-party agreement in which BART procures a new fiber-optics system supporting its rail operations from MFS Network Technologies; MFS invests its own funds to install additional conduit throughout the system, which it will rent to carriers willing to pull their own fiber; and Caltrans is included as a silent partner because some of BART's right-of-way used in this project is leased from the State. In return for access, BART receives 91 percent of lease revenues from MFS-owned conduit, MFS retains 9 percent, and Caltrans receives a portion of BART's revenues plus 4 fiber strands.
- *City of Leesburg, Florida:* The City of Leesburg, Florida, established a communications utility with two private partners, Knight Enterprises and Alternative Communications Networks (ACN), which will design and construct the network. The City funds and owns the dark fiber on its right-of-way, a portion of which will be used for public secto needs. ACN has exclusive rights to lease the remaining capacity in this system to private and public customers, who will own their site-to-backbone fiber link. The City will receive the lease revenues until its capital investment has been repaid; thereafter it will split the revenues with its partners. Leesburg reserves the right to enter into agreements with other partners for additional infrastructure.

CONCLUSIONS

Shared resource projects offer a new opportunity for public-private partnering for transportation agencies and are particularl relevant to ITS projects. Although a number of issues must be addressed, there are options for each so that individual projec can be structured to suit particular circumstances. Shared resource partnering, however, is market-driven and the window of opportunity for individual projects is limited, with the specific time frame depending on local circumstances.

From FHWA's perspective, it is important to plan for effective outreach on shared resource projects in the very near term in order to acquaint public agencies with the issues and possibilities before the opportunity for such projects is past. To this en this study also included the preparation of guidance for public (and private) agencies interested in entering into shared resource projects. This guidance, published as a stand-alone document and available from FHWA, identifies issues associate with shared resource projects, catalogs the options available to address each issue, summarizes advantages and disadvantage of some of the most salient issues, and succinctly describes the stages in development of a shared resource project.

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1.0 INTRODUCTION

1.1 BACKGROUND

The advent of fiber-optic communications technology coupled with continued rapid growth in demand for communications capacity have led private communications companies to seek to build new and extend existing fiber-optics networks. Coincident with this, government agencies at all levels are seeking to establish communications networks for intelligent transportation systems (ITS) and other governmental functions. It is in this context that there is increased incentive and opportunity for sharing the public resource of highway *right-of-way* in exchange for private telecommunications expertise and capacity to further both public sector and private corporate objectives.

In light of these developments and a growing body of applied experience, the Federal Highway Administration (FHWA) authorized this study to explore nontechnical issues related to such projects, generally referred to as "shared resource" projects, and to develop and present guidance for those considering this approach in highway rights-of-way.

Although shared resource projects are rightly heralded as an innovative approach to satisfying public sector needs, they are only one of several ways to provide for these needs and, by no means, a universal solution. Before embarking on shared resource project approach, public sector agencies must evaluate their telecommunications needs, identify and evaluate the several options available to them to meet those needs (including private sector-supplied services), and then evaluate the appropriateness of each alternative in light of specified needs. This study on shared resource projects was intended to support those agencies that, after this initial screening process, have determined that shared resource projects do indeed offer the best solution.

The study was conducted by a research team led by Apogee Research, Inc., and including Nossaman, Guthner, Knox & Elliott, and Dr. Thomas Horan. Apogee Research, based in Bethesda, Maryland, is a transportation consulting firm recognized for its work in infrastructure finance, market analysis, and economics. Nossaman, Guthner, Knox & Elliott, a California law firm, is a leader in legal and institutional issues involving communications systems, toll roads, mass transit, and ITS. Dr. Horan is a nationally recognized expert in institutional issues and ITS.

The Shared Resource Study had four major objectives:

1. Identify where shared resource approaches have been used or are being considered for installation of communication systems in highway rights-of-way, and identify the public agencies and private sector organizations involved.

2. Identify and analyze legal and institutional issues that have arisen or are likely to arise in using a shared resource approach, and develop recommendations and alternatives for addressing them.

3. Report on findings.

4. Prepare guidance for public and private officials considering a shared resource approach.

This study does not focus on technical issues of design, installation, or maintenance of communications technologies in highway rights-of-way.

1.1.1 Shared Resource Project Characteristics

For the purposes of this report, "shared resource project" refers to those projects that share public highway rights-of-way, previously viewed as entirely within the public domain, for the installation of telecommunications hardware (principally fiber-optic lines but also including cellular towers). Compensation to the public sector may or may not be involved, though in the strictest sense "shared resource" implies some form of consideration granted to the public agency partner by the private sector participant that is permitted access to the right-of-way or other public resource. A shared resource project in this

context has four specific features:

1. Public-private partnering;
2. Private longitudinal access to public roadway rights-of-way;
3. Installation of telecommunications hardware (principally fiber-optic lines) in the right-of-way by private companies and/or public sector agencies; and
4. Compensation over and above administrative costs granted by the private sector partner to the public sector right-of-way owner.

Compensation options include barter and cash. In barter or in-kind arrangements, private parties install the system, receiving access to the right-of-way for their own capacity in return for providing telecommunications capacity telecommunications services to the public agency. In cash arrangements, private parties install the telecommunications system, receiving access to the right-of-way in return for monetary compensation to the public agency. Hybrids of the barter and cash alternatives can also be created in which in-kind compensation (communications capacity) and monetary compensation are combined as consideration for private access to right-of-way for private sector objectives

Of course, it is possible for a public agency to allow private access to highway right-of-way without direct compensation of any kind, simply for the benefit to the community of having telecommunications infrastructure located in the highway, where it is most advantageous to development of ITS services or other communications needs.

Shared resource projects are particularly relevant to the development of ITS products and services, which use fiber-optic and wireless communications systems. FHWA's ITS architecture provides for flexibility in selecting wireless or wireline communications; nonetheless, it is generally recognized that some longitudinal wireline applications will be required in all systems. Although such systems can be can be leased from private telecommunications providers or installed, owned, and operated entirely within the public sector, shared resource projects may offer the public sector a way to implement ITS (wireline and wireless) with a lower financial burden.

Beyond these direct transportation system benefits, a shared resource approach can

- Promote economic development,
- Support development of a region-wide communications network infrastructure,
- Reduce transportation infrastructure costs for state and other transportation agencies,
- Support new ITS services and products,
- Facilitate educational networks and distance learning,
- Support traffic management, congestion mitigation, and transportation efficiency, and
- Promote development of ancillary products and services.

In places where longitudinal utilities may be accommodated within highway rights-of-way without compromising the integrity of the highway system, state and local political subdivisions may identify a number of advantages in extending access privileges to other private organizations. Allowing telecommunications companies to install fiber-optic lines in public rights-of-way may provide an opportunity to accelerate certain ITS services and to lower the cost of such services by requiring shared resource partners to (1) pay for the right to use the right-of-way, (2) provide in-kind services to the public sector, or (3) contribute a combination of barter and monetary compensation.

Of course, in several states, particularly those that are less populous, interest in these types of projects is not yet sufficient to support ITS implementation. For example, Alaska is not interested in ITS. The state has not yet completed its federally aided highway system, and existing capacity will be sufficient for at least the next 20 years. Hawaii, too, cites low population density and geographic constraints as limiting factors. The City of La Mesa, in San Diego County, California, has expressed interest in shared resource projects but perceives a lack of private sector interest because of its areas of low population density.

Low population density or "rurality" can also be an incentive. The City of Leesburg in Central Florida entered into a public-private partnership to attach all city-owned and -occupied office buildings to a network of computer systems using fiber-optic cable and to develop an information highway in the Leesburg Utility territory. Leesburg officials cite rurality as a compelling incentive for developing a fiber-optics network:

... while there are not a large number of users..., there may be compelling needs for modern communications due to the rurality itself. A modern communications highway in a rural area can enable that area to compete on the same playing field as large metropolitan communities.

1.1.2 Utility Accommodation Policies

Traditionally, access for non-transportation communication networks in highway rights-of-way has been carefully controlled, particularly with respect to freeways and limited access highways. The intent has been to minimize the negative impact of utility maintenance vehicles on traffic flow and traffic safety, minimize obstructions in the right-of-way and avoid open cuts into roads and rights-of-way that utility lines typically require, and minimize the costs and complexities of future roadway expansion or modification.

The American Association of State Highway and Transportation Officials (AASHTO) accommodation policy reflected these concerns. Traditionally, AASHTO policy precluded accommodation unless the utility could show that

1. The accommodation will not adversely affect the safety, design, construction, operation, maintenance, or stability of the freeway;
2. The accommodation will not be constructed or serviced by direct access from the through-traffic roadways or connecting ramps;
3. The accommodation will not interfere with or impair the present use or future expansion of the freeway; and
4. Any alternative location would be contrary to the public interest. This determination includes an evaluation of the direct and indirect environmental and economic effects that might militate against selection of the alternative non-highway right-of-way.

The intent was to minimize the number of utilities that were allowed longitudinally in the freeway right-of-way.

The U.S. Department of Transportation (USDOT) and most state highway agencies adopted the AASHTO policy. But on February 2, 1988, USDOT published a new policy in which states would have the power to approve the installation of fiber-optic cables and other utility lines along interstate highway rights-of-way. More recently, on October 29, 1995, the AASHTO Board of Directors sanctioned placement of fiber optic cables in highway and roadway rights-of-way, subject to new guidelines to be established by AASHTO.

Prior to its policy revision in February 1988, FHWA approved requests for cable laying on a case-by-case basis. Although the old policy did not ban fiber-optic installations on interstate highways, it strongly discouraged them. Only 250 state requests for utility installations were approved between 1960 and 1988. The USDOT policy change requires states to file a plan with FHWA describing policies on utility installation. If a state chooses to allow utilities along interstates, it must ensure that safety is not affected. States must also examine what effect turning down an application would have on farmland productivity and look at any impairment or interference with the use of the highway.

With this authority to make state-level determinations regarding the accommodation of utilities in state highways *and* interstates, some states have revised their policies to permit the installation of longitudinal utilities in the public right-of-way. However, the inventory undertaken for this study indicated that many states had not yet (October 1994) revised provisions for longitudinal encroachment.

States considering revision of utility accommodation policies have not lost sight of their basic interest in the public right-of-way-to provide safe and efficient transportation access-and have been careful to maintain control over access to the right-of-way. Louisiana, for example, rejected a private shared resource proposal for cellular phone towers in the right-of-way because of safety concerns. And in its 1992 Feasibility Study of Using Highway Right-of-Way for Telecommunications Networks, the Washington State DOT (WSDOT) cautioned against permitting too many users access to the right-of-way. WSDOT cited the following liabilities:

(1) increased safety risks to network maintenance staff and to the traveling public, (2) a potential for negative impacts on traffic flow, (3) additional costs and considerations during the design and construction of roadway modifications and (4) increased complexity in the management and design of WSDOT's SC&DI communication networks.

Delays related to efforts to change the policy are an additional factor. Although the WSDOT study recommended revision of the state's policy, it acknowledged that revisions could take as long as 24 months. The state's policy has not changed.

Other states simply do not favor longitudinal encroachments. For example, in Florida, notwithstanding any statutory limitations, it has been the Florida DOT's (FDOT) policy not to allow private installations. In a recent project to share segments of the microwave backbone and tower space for the Motorist Aid system, FDOT specifically chose microwave technology over fiber optics to avoid the need for permitting maintenance crew access to the right-of-way. The state has also expressed concern that if it allowed one private installation, it would have to permit others, leading to over-utilization. In Rhode Island, the accommodation policy was revised after the change in USDOT regulation but still allows longitudinal utility encroachments of only 1,000 feet-and only where needed to cross major physical features. In Georgia, public utilities and telephone companies had been permitted to use public rights-of-way but no longer can do so, and private use is forbidden by state law. In Indiana, longitudinal installations on highways with limited access control are generally discouraged, and longitudinal installations on highways with full access control are permitted only if justified by extreme hardship or unusual conditions and only if there is no impairment of safety or future highway expansion.

Even where states have revised the AASHTO policy, accommodation policies and shared resource projects have continued to focus on the safe and efficient operation, maintenance, and control of the highway system. For example, the RFP recently issued by Maryland for "Fiber Optics along the Baltimore to Washington Corridor" requires that proposers have a 24-hour highway emergency response capability and lists several access restrictions to protect highway use and safety. Although not yet involved in a shared resource project, Cellular One has approached the Illinois DOT with a plan for attaching microantennae to bridges in the Chicago area; safety is viewed as the main concern.

The Iowa DOT Highway Division Policy for Accommodating Utilities on the Primary Road System (revised and implemented in May 1992), established a permit process for the purposes of ensuring the safety of motorists, pedestrians, construction workers. and other highway users; ensuring the integrity of the highway; documenting the location of utility facilities; and managing the highway right-of-way. Except for emergencies, access must be obtained from a point other than freeways or ramps.

1.2 STUDY APPROACH

The research team's approach to the study involved five tasks:

- Task A: Literature review and issue identification
- Task B: Focus group review of Task A findings and selection of issues for further research
- Task C: Analysis of issues selected in Task B
- Task D: Focus group review of Task C findings
- Task E: Final report and guidance

Task A consisted of a comprehensive literature search and review to identify projects that use or will use a shared resource approach for telecommunications projects along highway rights-of-way as well as current and planned policies regarding utility accommodation. The literature review, supplemented with telephone follow-up of selected cases, also identified other projects (not necessarily involving telecommunications or highway rights-of-way) in which similar nontechnical issues have been raised or examined in detail and which offer instructive experience addressing these issues. The results provided a common data source for identifying key issues and potential resolutions by the experts participating in the Task B focus group.

Because FHWA's revision of policy to allow state highway agencies to expand the degree of utility encroachment in highway rights-of-way occurred at the beginning of 1988, statewide shared resource efforts relying on full or partial use of interstate rights-of-way have been possible only in the last few years. Both the scope and the methodology of Task A reflected the relatively recent availability of longitudinal access to the interstate system.

In Task B, a focus group of public and private sector experts in transportation and/or communications was convened to discuss nontechnical issues arising in shared resource projects, using the Task A report as the basis for discussion. Nontechnical issues included institutional impediments; procurement limitations; regulatory and legal issues; issues related to costs, funding, and financing; and concerns with respect to effects on privacy and the environment. Proponents face four types of issues in developing effective projects:

- Threshold legal and political issues;
- Financial issues;
- Project structure issues; and
- Other (contract) issues.

Of the issues inventoried and described in Task A, the focus group identified the following specific issues as appropriate for further research in Task C:

- Public sector authority to receive and earmark compensation;
- Evaluation of public resources/right-of-way;
- Tax implications of shared resource projects; and
- Contract terms (exclusivity, relocation, and liability).

These choices reflected the concerns of the focus group with practical implementation. Socio-political issues and other non-business issues were discussed, but the group directed Task C research toward "business" issues which directly affect the economic viability of shared resource projects.

Task C considered five specific case studies selected from shared resource projects that have reached the implementation stage and that provide as broad a range of such projects as feasible. For each case study, the team interviewed public and private officials and reviewed contract documents, RFPs, and other materials.

In addition to analyzing data from the case studies, Task C involved additional independent legal and economic research on two selected issues:

- Evaluation of public resources/right-of-way: Investigation of the bases for valuation of public right-of-way, including evaluation of payments for railroad and other utility right-of-way and identification of the objective factors that influence right-of-way value; and
- Tax implications of shared resource projects: Legal analysis of the effect on tax-free debt status of different forms of public-private partnerships in shared resource projects.

Under Task D, the study team convened a second focus group to review the nontechnical issues selected by the earlier focus group (and evaluated in the Task C report) and to discuss pending legislation on telecommunications. Attendees included many of the same experts who had participated in the first focus group plus other public and private sector officials invited to broaden the group's expertise and range of experience.

Based on the findings of this study, FHWA also undertook a series of briefings and workshops across the country to discuss the features of shared resource projects and the issues that need to be addressed in their implementation.

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2.0 CASE STUDIES

This chapter briefly summarizes basic characteristics of the shared resource arrangements in each case study. The remaining chapters of the report draw on information from the case studies, as appropriate, to illustrate the variety of approaches used to address the shared resource issues identified by the focus group.

2.1 STATE OF MARYLAND

Maryland is engaged in a shared resource project to install 75 miles of fiber optics in its right-of-way. The agreement involves MCI and Teleport Communications Group (TCG). Operation began on September 4, 1995 on a portion of the project (College Park to downtown Baltimore segment).

Maryland is allowing MCI access to 75 miles of right-of-way for 40 years (with options for renewal), in which MCI may lay as many conduits as feasible and desired and pull fiber as needed afterward. In return, MCI is giving Maryland 24 "dark fibers" for state use and acting as the lead contractor in building the system and providing routine maintenance. MCI has installed two conduits in the Baltimore-Washington Corridor segment of I-95, one for itself and one for Maryland, with no excess capacity. TCG, which entered the arrangement as a subcontractor to MCI, will pay MCI to install and maintain fiber for TCG's use in the privately held conduits. In return for access, TCG is providing the state with equipment necessary to light the original 24 dark fibers plus an additional 24 unlit fibers for public sector use. Each of the three partners retains ownership of the fiber dedicated to its use. As the party responsible for construction and maintenance, however, only MCI will physically access the system.

Maryland set up this shared resource project strictly as a procurement, purchasing telecommunications capacity with right-of-way access. The state also disaggregated its fiber-optics backbone geographically. Bidders could invest only in right-of-way routes of specific interest to them. The right-of-way for this agreement is part of the I-95 corridor that runs between Washington, D.C., and New York City, an area in which telecommunications redundancy can be valuable. Railroad and other utility rights-of-way are competitive options in the corridor.

The telecommunications capacity gained by the public sector as part of this shared resource arrangement will be used for a broad array of public agency needs; that is, it is not restricted to transportation needs. Coordination of public agency communications needs, under the auspices of the Department of General Services (DGS), preceded this shared resource project. The DGS began coordinating and purchasing telecommunications state-wide in the mid-1980s, when each agency was found to be contracting separately for inter-LATA services. At the time that the shared resource approach was introduced, self-supply through a statewide network was already under consideration.

The RFP published by the DGS listed a number of technical requirements in exchange for private sector access to the right-of-way, including fiber, manhole access, and equipment. The bid received was less than fully compliant with these requests. For example, the state had requested equipment to light the fiber and local communications switching connections as well as free maintenance; the bidder offered dark fiber and maintenance. The DGS, however, has the ability to negotiate post-bid revisions and was able to conclude a more favorable arrangement with MCI. TCG did not respond to the initial RFP but was incorporated later in the arrangement.

Although the rights granted to MCI and TCG are technically not exclusive, the private partners have "practical exclusivity" because the state does not want repeated construction projects in the right-of-way. Maryland will probably allow only one company to put in fiber and oversee maintenance. Additional partners would have been accepted if they had responded to the RFP with an acceptable bid. This limited window of opportunity was defined by Maryland for both practical and safety reasons. The state does not want to create problems with traffic congestion and accidents from additional construction.

The shared resource arrangement provides for relocation cost sharing. That is, the state will pay for the necessary duct for the fiber-optics cables if and when relocation of the duct is required by construction or reconstruction of the roadway. MCI will relocate and provide ancillary equipment to reestablish the network connectivity to operate at "pre-move" performance levels. Potential contractors had requested that the state commit not to require relocation for at least five years from the contract date. Although the state did not expect to move facilities within that term, it would not commit contractually to refrain from doing so. It is unclear MCI will be responsible for relocation if the state installs an ITS application.

The state's liability is limited to repair of any facilities that it damages; it is not liable for consequential damages. MCI has

indemnified the state for any dissemination of information pertaining to the contract and for any negligent performance of its services under the contract. According to the interviewees, this was a significant issue in the negotiation of the contract. Because MCI is a major long-distance contractor, potential liability costs for "consequential" damages could run into millions of dollars.

2.2 OHIO TURNPIKE COMMISSION

During the 1980s the Ohio Turnpike Commission entered into a number of licensing agreements for installation of telecommunications facilities in the Turnpike right-of-way, the most recent in the late 1980s. These agreements use a standard license form and are expressly non-exclusive; licenses extend for a 25-year period. Most of the current applications are for cellular uses; of the four or five licensing agreements for fiber optics, two covered the entire length of the Turnpike. Litel has 200 miles of fiber and MCI less than 75 miles of fiber along the Turnpike; other firms have also been granted licenses.

Of the five cases studied, only the Ohio Turnpike Commission receives a fixed per-mile fee for the use of its right-of-way. In return for allowing access, the Commission receives a license fee of $1,600 per mile of installed fiber, as well as rights to use the fiber optics for Turnpike purposes at low or no cost. At present, the Commission uses relatively little of the capacity available. Valuation of the right-of-way was determined with information from market studies conducted prior to the 1980s.

The Ohio Turnpike agreement requires relocation, alteration, or protection of the telecommunications facility, at the licensees' sole expense, in order to avoid interference with the operation, reconstruction, improvement, or widening of the Turnpike. From a strictly legal drafting perspective, the agreement contains excellent, broadly drafted indemnities. The licensees are required to maintain specified levels of insurance and to hold the Turnpike Commission harmless from losses, costs, claims, damages, and expenses arising out of or related to any claims as a result of the agreement. The Commission has the right to defense by its own counsel and to control any claims made against it. The agreement also requires licensees to indemnify the Commission for bodily injury and property damage, to the extent of the licensees' negligence. The Commission is only liable to the extent that damage to its system is caused by its own "gross" negligence.

2.3 STATE OF MISSOURI

In 1994, Missouri entered into a contract with Digital Teleport, Inc. (DTI) for the installation of a statewide backbone system of more than 1,300 miles of fiber optics. More than 300 miles have been installed and activated, and an additional 100 miles of conduit have been installed. The principal areas already constructed are within the City of St. Louis and between St. Louis, Columbia, and Jefferson City. In return for allowing access to the right-of-way, Missouri receives six lighted fibers for state highway use as well as DTI maintenance of the system.

Missouri's arrangement offers two strong advantages. It gives exclusivity to one telecommunications firm, although that firm can lease access to other telecommunications firms on its lines, and is doing so. And there is limited or no serious competition from alternative right-of-way locations, such as railroads, in the areas of greatest interest to the bidders; i.e., within the St. Louis Standard Metropolitan Area (SMA).

Missouri law allows utilities to exist in highway rights-of-way so long as they do not interfere with the roadway; however, the state has historically restricted utility access on the freeways to outer roadways or limited utility corridors, where access is contingent on meeting state permit requirements. Missouri's agreement with DTI grants an exclusive easement for 40 years within highway air space outside the standard utility corridor. The DTI facility was defined by the state as a "state highway facility," so it is permitted under the contract to be located in places other utilities are not located. "Exclusive" in this context applies only to other fiber-optics cable systems or communications systems.

Missouri, like Maryland, set up its shared resource project strictly as a procurement, purchasing telecommunications capacity with right-of-way access. DTI's exclusive access is considered a procurement contract awarded to a single contractor in a competitive process, rather than a special privilege, which might be subject to legal challenge. Missouri's RFP specified requirements for a basic statewide fiber-optics system, with the winner to be that bidder offering the most attractive package for transportation telecommunications infrastructure and service over and above the minimum requirements. Compensation was specified as access to highway right-of-way for the winner's own telecommunications system in the same corridors as the state system.

Although DTI can also locate within the standard utility corridor, the exclusivity provision does not apply to that portion of the right-of-way. The provision permits other firm's fiber-optics cables to cross DTI's easement at an approximate right angle, but only upon mutual agreement of the Missouri Highway and Transportation Commission (MHTC) and DTI regarding the location. Nothing in the agreement limits the Commission's authority to install its own fiber-optics cable for highway purposes within MHTC air space.

The state is to bear the cost of relocating. MHTC may either acquire additional right-of-way for the fiber-optics cable corridor in some fashion acceptable to DTI or remove and relocate other utilities at its own expense, so that DTI may place its system in the utility corridor if necessary.

DTI assumes responsibility for all warranties and liabilities for service and performance, and maintains insurance for bodily injury and property damage, product, and completed operation (with underground property damage endorsement, commercial automobile insurance, and worker's compensation insurance). Holders of sub-easements from DTI must maintain the same level of insurance.

MHTC is not responsible for any liability incurred by DTI. DTI is responsible for all injury or damage for its negligent acts or omissions and "saves harmless" MHTC for any expense or liability deriving from such acts or omissions, whether on its part or on the part of its subcontractors or agents. MHTC is liable for actual repair costs if its personnel, contractors, or subcontractors damage or destroy any part of the fiber system or equipment installed by DTI, but it is not liable for lost revenues or other incidental or consequential damages sustained by DTI.

2.4 BAY AREA RAPID TRANSIT

In this three-party agreement concluded in 1995, San Francisco Bay Area Rapid Transit (BART) procured a new fiber-optics system for use in operating its rail transit facilities. In addition to installing approximately $45 million worth of capital improvements procured by BART for its own system, MFS Network Technologies (MFS) will invest $3 million to install additional conduit throughout the BART system. MFS will then rent that conduit space to any carrier that wishes to pull its own fiber. BART will receive 91 percent of the rental returns, and MFS will receive the remaining 9 percent. BART anticipates that these revenues will cover all but $2 million of the cost-including operations, maintenance, and interest on debt-for its train control and communication system over the 15-year period; they may cover even more.

BART had investigated developing its own fiber system but determined that ownership of fiber or conduit might trigger its regulation as a public utility, which it preferred to avoid. This prompted BART to search for a joint development partner.

BART's right-of-way gains value from the fact that it is a closed system and generally well protected from intrusion. Railroads are the main competition for right-of-way lessees; Southern Pacific, for example, owns substantial right-of-way leased to telecommunications carriers.

A particularly valuable portion of BART right-of-way runs through the BART tunnel under San Francisco Bay. Although there are two other ways for telecommunications firms to cross the Bay, they pose greater risk: running cable across the Bay floor runs the risk of disruption from shipping or natural events, and capacity for stringing fiber along the Bay Bridge is limited due to weight considerations.

The BART agreement also involves the California DOT (Caltrans) as a "silent" partner. Of the 100 miles of right-of-way included in BART's current and planned extensions, 25 miles are actually owned by Caltrans, which conceded control but not ownership to BART. Thus, Caltrans is also a lessor and, for the airspace lease it negotiated with BART, will receive a portion of the revenues generated from MFS conduit leases after BART has fully paid for its telecommunications system. BART divides its revenues by facility segment and will pay Caltrans 25 percent of the revenues it receives from conduit leases on those segments of right-of-way shared with Caltrans (which are considered relatively lower value for telecommunications use). This cash compensation goes into the state highway account to be used for highway improvements throughout the state as allocated by the California Transportation Commission; this format has already been established by Caltrans, which raises about $12 million per year from other airspace leasing.

Caltrans also receives in-kind compensation-4 of BART's 48 strands of fiber-optics along the full 100 miles of the BART system, with access at 15 strategic locations. In fact, this in-kind compensation was the dominant attraction for Caltrans. Caltrans has estimated that this in-kind benefit is equivalent to $8-12 million in avoided costs for independent construction of Caltrans infrastructure or $960,000 per year in lease costs for comparable fiber.

Caltrans' lease of air space to BART appears to be exclusive for the conduit system. BART's license to MFS does not provide exclusivity; however, as long as the conduit system between two adjacent BART stations has unoccupied capacity and MFS is not in default under the agreement, BART has agreed that it will not grant any other provider a license to install a communications system between such points. After system capacity has been reached this exception will cease, even if space later becomes vacant; however, BART must give MFS right of first refusal if BART wants to add conduit capacity.

BART is obligated to designate a new route for the conduit if it must be relocated, and all relocation costs not paid for by a third party are to be paid by BART. MFS indemnifies BART for everything resulting from MFS's performance under the Agreement, regardless of the negligence of BART or whether liability without fault is sought to be imposed on BART, except where the damage results from negligent or willful misconduct by a "BART Indemnitee" and was not contributed to by any omission of MFS. MFS is not obligated to indemnify BART for BART's own negligence or willful misconduct.

Both BART and MFS waived consequential, incidental, speculative, and indirect damages, lost profits, and the like. The agreement includes the form of license to be used by MFS in marketing excess capacity to third-party customers, the "User Agreement." Interestingly, it requires the user to insure MFS, exculpate MFS from liability for service interruptions, and indemnify MFS.

2.5 CITY OF LEESBURG, FLORIDA

The City of Leesburg's Communications Utility and its private partners, Knight Enterprises and Alternative Communications Networks (ACN), developed a new fiber-optics system within the City. Leesburg is providing funding for construction and right-of-way access on above-ground utility poles; ACN is designing and constructing the network and leasing the capacity to private or public customers under a five-year contract with the City.

The City owns only the dark fiber on its right-of-way, which it can also use for communications among its own buildings. Customers own the fiber from the right-of-way line to their own facilities, pay ACN a fee for access to the City-owned backbone, and can either use their own equipment or pay ACN for use of ACN equipment to light the fiber. Approximately 10 miles of fiber have been installed, and plans are under way for an additional 30 miles of fiber.

Leesburg is investing its own capital in the project and will receive cash compensation based on lease payments (i.e., revenue sharing) in addition to fiber-optics capacity. The initial cash revenues will be used to repay capital and, thereafter, revenues will be split evenly between the City and its telecommunications partner. Funds will be deposited into a separate utility fund for communications to pay maintenance and miscellaneous costs. At the end of the year, any funds remaining in the account will be transferred to the general account. Leesburg will also use revenues from its telecommunications system to obtain fiber-optics interconnections for government services.

The City's agreement with ACN requires that if other entities express interest in the City's cables, ACN must coordinate the connection and the equipment used for those connections. ACN can bill those other entities for time and materials spent in the evaluation. Further, since the City is sharing revenues from ACN's marketing of the network, it prohibited ACN from competing with the City's cables.

Essentially, there are two levels of private sector exclusivity in the Leesburg arrangement: (1) the number of private sector partners involved in the shared resource agreement, and (2) the number of telecommunications service providers gaining access to the fiber-optics infrastructure. ACN is the exclusive marketing partner for City-owned cable built under the ACN-Leesburg arrangement. The City can allow additional vendors to operate within the service area under other agreements, and the "Leesburg Telecommunications Systems Permit Ordinance" appears to contemplate open access to multiple vendors. Exclusive access to the City-owned telecommunications capacity is not granted to telecommunications service providers. The Leesburg-ACN agreement also has a unique reverse-exclusivity provision. Within the service area, ACN may not offer certain services on cables other than those provided by the City without permission from the City. Relocation is not explicitly addressed in the agreement, probably because of the short (five-year) duration of the contract.

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3.0 THRESHOLD LEGAL AND POLITICAL ISSUES

Threshold issues are those that determine whether shared resource projects are viable options for state and local highway agencies; these are the issues that must be addressed at the outset of a program for shared resource projects. Primarily legal and political, issues range from statutory or regulatory constraints on access to public rights-of-way for communications purposes, to political opposition to competition between public and private communications systems.

Shared resource projects are developing in an atmosphere of significant political and legislative activity. Several important telecommunications bills have come up before the United States Congress which, if enacted, would significantly affect the telecommunications industry and have associated ramifications for shared resource projects. These bills would measurably alter the market structure for telecommunications services and thus the relationship among service providers. Provisions in such bills may also affect the ability of local governments to negotiate specific public benefits in return for allowing access to a given telecommunications provider or offer exclusive right-of-way access to one vendor, or the telecommunications carriers that use public rights-of-way to offer preferential rates to public institutions.

3.1 PUBLIC SECTOR AUTHORITY TO RECEIVE AND EARMARK COMPENSATION RECEIVED

One of the essential threshold questions in determining whether a public agency will pursue shared resource projects, and which type of shared resource projects will be most attractive, is the ability of the highway to receive compensation for allowing private use of its right-of-way. The related factor of the ability of the agency to control the compensation it receives is also critical in its effect on the willingness of the agency to expend its resources in developing shared resource projects. This issue cuts two ways. Clearly, it is a disincentive to the highway agency to have compensation received in return for right-of-way access directed into a general fund. Although a benefit to the public as a whole, such a transaction looks unimpressive on the highway agency's balance sheet. In many cases, the type of compensation received by the public agency-in-kind telecommunications capacity or cash-is governed by its ability to receive and earmark compensation for access to its rights-of-way.

In states where the primary benefit of a shared resource project is viewed as accelerating implementation of ITS, concern with inability to earmark the funds specifically for that use may render the DOT unwilling to accept the additional responsibilities and risks associated with permitting access to the public right-of-way. In states where non-transportation-related public use of the installed fiber-optic network is the primary attraction of a shared resource project, the state may be concerned that it is not able to use revenues generated from the public right-of-way for non-transportation-related uses.

3.1.1 Barriers to Compensation

Historically, one barrier to receiving compensation has been the obligation of highway agencies in some states, such as California, to allow public utilities in the right-of-way at no charge, other than fees for the cost of administering the franchise. It is worth noting that in those states, the transportation authority may take the position that since it cannot charge for access, it will not provide access. For example, in California, public utility telecommunication companies are permitted access to public streets and highways to construct and install telecommunication facilities without obtaining local franchises or paying for the use of such streets and highways (Cal. Pub. Util. Code § 7901). However, Caltrans has historically interpreted the law to be permissive rather than mandatory in regard to state highways and has generally refused to permit such access because it cannot charge for it.

A second barrier has been the traditional policy regarding federal-aid highways that limits longitudinal utility encroachments. This barrier was reduced, to some extent, by the 1988 revision of the USDOT policy on longitudinal encroachment. The new rule requires state accommodation plans to evaluate the desirability of utility installation and ensure that safety is not affected in the event that longitudinal encroachments are permitted. Since many states have not revised their accommodation policies, however, a highway agency's ability to receive compensation may remain limited by its inability to allow access to right-of-way.

In spite of more liberal federal guidelines, accommodations policies in some states restrict transportation departments from

charging for longitudinal use of the right-of-way. South Carolina officials, for example, indicated that a shared resource plan was "more trouble than it was worth," in part because state law does not allow the assessment of fees. Unless state laws and accommodations policies are revised to permit receipt of compensation for longitudinal access to the right-of-way, the departments charged with maintaining the public rights-of-way are logically less motivated to absorb the additional costs and risks associated with permitting such access.

A further limitation on compensation derives from regulations governing federal-aid highway financing. Where highway right-of-way is acquired with federal-aid money, the federal regulations require compensation to repay federal funds if the right-of-way is disposed of for non-public purposes. This provision limits the range of shared resource projects available to state highway agencies. The limitation may not be significant, however, since credit must be returned to the federal government only when right-of-way is transferred, not when joint use is permitted. The case studies indicate that most shared resource transactions involve granting a lease or license, rather than transferring property interests which might trigger credit to federal funds.

Federal regulations also provide an alternative means of pursuing shared resource transactions without requiring credit to federal funds. The state highway department may permit the use of highway airspace for non-highway purposes, so long as the airspace is not required for highway uses within the foreseeable future. Although use of airspace by private parties is subject to FHWA approval, revenues generated by airspace leasing are expressly exempt from federal funds credit requirements. Caltrans used this provision in granting BART the right to develop its contract with MFS.

3.1.2 Agency Type

In essence, the extent to which public agencies can receive and earmark compensation depends on whether their authorizing legislation defines them as

- Highway service providers, or
- Revenue generators.

The case studies suggest that public agencies can be divided into three groups, based on their characteristic statutory authorities to receive and control compensation. Special purpose transportation agencies such as turnpike authorities and transit agencies (for example, the Ohio Turnpike Commission and BART) have the broadest organic legislation, which allows considerable latitude in accepting any type of compensation available and using such compensation for the agency's transportation purposes.

State DOTs are highway service providers, generally more limited in their authority to receive compensation. In some case studies, states elected to avoid negotiating for cash compensation rather than debate their authority to receive such revenues. Even where compensation can be received for private access to the right-of-way, the compensation received may enter state accounts unrelated to the project producing the revenue. Finally, municipal utilities such as those in Leesburg, Florida, and Palo Alto, California, can generally receive revenue from right-of-way access, since utilities have undisputed authority to collect and earmark compensation. However, such utilities are subject to oversight by state utility regulators.

Greater flexibility may come only through legislative change. Some states have begun to move toward liberalizing agencies' authority. California has initiated four public-private tollroad projects, and similar efforts are under way in Washington and Minnesota, among other states. But these efforts are generally considered demonstration projects, and they do not allow agencies additional authority or flexibility with respect to existing state highways. To provide maximum flexibility for agencies to enter into shared resource arrangements which produce cash compensation, most states will need to revise statutory authority for highway agencies along the lines of the authority granted to the Ohio Turnpike Commission.

Although expanded authority for highway agencies may be the most comprehensive approach to establishing the ability to receive and earmark compensation, public policy and political concerns may limit the willingness of state legislators to modify the authority of tax-supported agencies comprehensively. An alternative may be to establish state-level ITS agencies authorized to lease state highway rights-of-way at a nominal fee and given broad authority to contract for ITS services or enter into public-private partnerships, using access to state highways as capital. Creating such agencies would, of course, also require new state legislation, but resistance to such a broad grant may be reduced if the grant is directed at a special purpose such as development of ITS services.

3.1.3 Project Form

Another distinction among the case studies is the extent to which projects take the form of a procurement of goods or services, rather than a lease or license to use right-of-way. If an agency can allow the use of its right-of-way by private parties but is uncertain about its authority to receive in-kind or cash compensation, it may choose to pursue a procurement approach. The procurement approach is limited since it precludes either cash compensation or the kind of public-private

partnership exemplified by the BART transaction. "Purchasing" telecommunications facilities or services with right-of-way access may also raise issues under individual state's procurement requirements, since there may be some obligation to monetize the value of the right-of-way in order to establish the cost of the procurement.

Nonetheless, the procurement approach may both save time and avoid political opposition for shared resource projects. Missouri intentionally avoided cash compensation from the private sector and operated its shared resource project strictly as a procurement, purchasing telecommunications capacity with right-of-way access. Maryland used the same approach. The City of Leesburg, like BART, will use the revenues from its telecommunications system to recoup construction costs and gain fiber-optics interconnections for government services. Of the five cases studied, only the Ohio Turnpike Commission receives a per-mile fee for the use of its right-of-way.

3.2 OTHER THRESHOLD ISSUES

In addition to authority to receive and earmark compensation, selected by the focus group for in-depth analysis, the research team identified and reviewed a number of other threshold legal and political issues in Task A. These are described and evaluated briefly in this section of the report.

3.2.1 Authority to Use Public Right-of-Way for Telecommunications

One of the most significant current obstacles to shared resource projects is legal and institutional limitation on authority to use public rights-of-way for telecommunications. Although a number of states authorize the use of local streets for utility purposes, and some, such as California, mandate free access for utilities, right-of-way on state and interstate highways has traditionally been considered inviolate. The issue here is whether the public sector has the authority to allow other uses and users into the right-of-way. The other side of the same issue is whether the state has the right to preclude other uses or users from its rights-of-way.

The WSDOT Feasibility Study in 1992 surveyed 51 jurisdictions on their accommodation policies and obtained 34 responses. The study concluded that states have varying policies and summarized those policies (in order of increasing restriction) as follows:

- Only one state, Kansas, allowed all utilities on freeways and limited access highways; six states permitted communication networks (only) in the freeway right-of-way; 18 states based their policies on a 1982 or 1989 AASHTO guideline for accommodation in the freeway right-of-way; 10 states permitted no utilities on freeways.
- Iowa and Georgia were the only states that charge for longitudinal use of their right-of-way. Minnesota was planning to charge for use of its freeway right-of-way once current laws changed.
- Only 14 states had some form of surveillance, control, and driver information (SC&DI) network and most are very rudimentary; Washington and California appeared to have the most progressive planning efforts to address SC&DI applications.
- Iowa, Oklahoma, and Wisconsin were the only states indicating that they had or planned to have state-owned telecommunication networks principally in the highway right-of-way that are or will be shared with other state agencies for non-transportation-related applications. New York indicated that its SC&DI network is shared with the State Patrol.

In addition to the obvious restrictions that a state's accommodation policy may place on whether the public right-of-way may be used for a shared resource project, as well as whether state or local agencies may exact a price for access to the right-of-way, the manner in which the public right-of-way was acquired for its transportation use may be a limiting factor. In many states much of the public right-of-way has been acquired by donation or dedication from the owners of property adjacent to the right-of-way. Landowners dedicate right-of-way either because they viewed it as advantageous to have the public highway adjoining their property, or because such dedication was required as a condition to development approvals for the adjoining property.

The documentation for acquisition of public right-of-way by state or local transportation agencies may effectively limit the ability to use all or portions of a highway for a "non-transportation" purpose. Traditionally, a dedication for street purposes has been construed to provide only an easement to the public unless the conveyancing document specifically indicates that it intends to transfer fee title to the public. In such cases, unless the transfer to the public agency was made sufficiently broad or specific, the landowner who made the dedication or donation arguably transferred only an easement and reserved any benefits flowing from leasing the air space. California enacted legislation specifically addressing this issue for new acquisitions. California Senate Bill 714 added section 104.2 to the California Streets and Highways Code in 1989, which states

If property is provided through donation or at less than fair market value to the Department for state highway purposes, or

purchased with funds provided by a local agency, the donor or seller may reserve the right to develop the property but any development of the property shall be subject to the approval of the Department and any reservations, restrictions or conditions that it determines necessary for highway safety.

In addition, Senate Bill 714 amended section 104.12, subdivision (a), of the Streets and Highways Code to read in part:

The Department may lease to public agencies or private entities for any term not to exceed 99 years the use of areas above or below state highways, subject to any reservations, restrictions, and conditions that it deems necessary to ensure adequate protection to the safety and the adequacy of highway facilities and to abutting or adjacent land uses . . .. *If leased property was provided to the Department for state highway purposes through donation or at less than fair market value, the lease revenue shall be shared with the donor or seller if so provided by contract when the property was acquired.* [emphasis added]

Thus, the status of the public agency's title to the public right-of-way and other state laws governing development may constrain the public sector's ability to reserve the benefits of shared resource projects entirely to the public.

3.2.2 Authority to Participate in Public-Private Partnerships

A significant barrier is posed by legal restrictions or institutional reluctance related to public-private partnership agreements. Although legislation has been enacted in some states and is under investigation in others to allow highway agencies to develop extensive partnerships, most such authorizations are limited to demonstration projects, where they exist at all. Moreover, safety in highway rights-of-way remains a significant concern of state highway agencies.

Generally, state agencies cannot act unless authority is specifically granted by statute ("express authority"), or unless such acts are necessary to achieve the express purpose or object of a statute ("implied authority"). State DOTs generally have broad *express* authority to contract for construction and maintenance of state highways and to plan, develop, and improve the state highway system. (*See*, e.g., Title 43, C.R.S., §§ 4-1-100 et seq.) Implied authority may exist to the extent *necessary* to carry out express purposes. But how far does that implied authority extend? Does it encompass non-transportation-related business activities for the purpose of raising transportation revenues? Does it permit participation in separate legal entities such as Help, Inc. (Heavy Vehicle License Plate program for monitoring interstate commercial vehicles using ITS technologies)? A number of states that are already involved in these projects, or are seriously considering them, have passed express legislative authority (e.g., *see*, California's AB 680 and Washington's recent privatization demonstration projects legislation).

In 1993, the Minnesota state legislature provided the state highway agency with unique capabilities to develop partnership agreements. Among other things, the legislation permits agreements with governmental or nongovernmental entities for sharing facilities, equipment, staff, data, or other means of providing transportation-related services. In California, the Caltrans is investigating the development of legislation authorizing shared resources on state highways. Michigan is seeking to modify state law to permit shared resources on an experimental basis. Massachusetts has adopted a formal policy statement regarding its desire to share resources, and the state believes that authority exists under federal and state accommodation policies.

3.2.3 Political Opposition from Private Sector Competitors

Political concerns may also deter agencies from entering into shared resource agreements. For example, the possibility of using shared resources to allow public agencies to compete with private agencies in providing telecommunication services may generate opposition from the telecommunications industry and raise concerns that public agencies are stepping away from traditional "governmental" services. Agencies may also be faced with inter-agency and inter-jurisdiction political barriers.

Typically, networks that are privately owned (so-called "bypass networks") are installed to avoid telephone companies' circuit costs and long-distance telephone costs. While a bypass network installed by a single organization would have a minimal impact on telephone company revenue, if enough organizations were to put their telecommunications on bypass networks it could decrease telephone company traffic significantly enough to result in local telephone company rate increases to the general public. So to the extent that a state would like to finance its own network by leasing out excess capacity, or obtain a telecommunications facility by permitting a company to install its own network and provide extra capacity for the public agency, it may expect private sector lobbying against any large network effort.

As a case in point, when the State of Iowa proposed a fiber network to accommodate all state and educational telecommunication traffic, it commissioned Ernst & Young to study the impact of the proposed network on the telecommunications industry in Iowa. Only when Ernst & Young determined that the state network posed no significant threat to the telecommunication industry did the state decide to move ahead with its procurement.

The perceived threat of state-owned "bypass networks" is just one component of broad political concern associated with the type of shared resource project to be undertaken by a state, and the appropriateness of public-private projects generally. A public agency's determination to install a telecommunications system in a public right-of-way for ITS purposes seems beyond political reproach. However, when opportunities are entertained to finance that purely transportation need by selling excess capacity in the network, or permitting private entities access to the right-of-way for privatized purposes in return for the provision of certain public services, the government may be perceived as entering into competition with the private sector.

A public agency's installation and operation of its own telecommunications network in the state right-of-way may be viewed as directly in competition with private telecommunications companies within the state. Financing the governmental purposes through a commercial sale of excess capacity may exacerbate perceived anti-competitive effects. Governmental activities may be viewed as even more anti-competitive by entering into a "partnership" with a private entity and not providing equal access to all parties desiring use of the public right-of-way.

Partnerships for shared networks may be viewed as creating a hybrid entity, not public and not private, and U.S. laws have little experience with this type of hybrid organization. To whom is the organization accountable? Voters or shareholders? As opportunities for entering into these types of arrangements increase, and the arrangements themselves become increasingly complex and sophisticated, the lines between appropriate governmental activity and private activity may blur.

Organizations which have entered into shared resource projects appear to have attempted to draw a bright line between governmental and non-governmental functions. Most of the projects studied involve a public agency's request for services in return for access to the right-of-way. Few, if any, have considered sharing excess capacity in competition with the private sector. For example, in response to concerns expressed by the State Public Service Commission, Missouri's agreement with DTI provides that Missouri's dedicated fiber can be used only for state purposes, not for revenue-generating purposes. This is also the case with the Ohio Turnpike agreement which provides use of the dedicated capacity only for Turnpike purposes that do not include sale to or use by any other person, or even any other public agency. The WSDOT Feasibility Study, however, does contemplate the possibility of recovering construction costs by renting available network facilities.

3.2.4 Inter-agency and Political Coordination

Another threshold political issue is faced when the proposed shared resource project will involve more than one public authority. To make the project attractive to the private sector, the public agency may need to be able to ensure the ability to continue cable into geographically contiguous areas. Cities within a large urban area may be unable to develop ITS projects or large shared resource efforts on their own, when the private partners need projects that cover the entire metropolis. Palo Alto cites this obstacle as the major reason its shared resource effort focuses on city services and not ITS.

Additional problems may arise when it is necessary to coordinate efforts among different agencies within the same political jurisdiction. Multi-agency relationships are obviously fertile ground for political conflict, as well as project delays, inconsistent regulations, and burdensome administrative requirements. Of course, multi-agency projects may also provide opportunities for overcoming barriers faced by one or more of the parties, as in the BART/Caltrans transaction with MFS.

3.2.5 Lack of Private Sector Interest in Shared Resource Projects

Finally, even assuming all legal and political issues have been resolved on the public partner's side of the arrangement, shared resource projects may falter because of private sector reluctance to participate. The benefits accruing to the public sector from participation in shared resource projects have been described. The obvious benefit to the private sector partner is access to a continuous right-of-way that can be negotiated with a single or only a few contractual arrangements rather than a laborious assembly of smaller parcels, perhaps even at a lower "cost" than access to comparable private rights-of-way. Nonetheless, potential private partners may not be eager to enter into such arrangements.

Several factors contribute to private sector reluctance or lack of interest:

- Limited demand for additional rights-of-way access, since many communications firms installed their backbone systems a number of years ago;
- Additional costs for infrastructure in public rights-of-way due to more stringent installation specifications (e.g., deeper trenches);
- Administrative/managerial burden of compliance with public sector contractual requirements and in-kind provision of compensation.